
Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

8 June 2022

Sub-Committee of Experts on the Transport of Dangerous Goods

Sixtieth session

Geneva, 27 June-6 July 2022

Item 6 (c) of the provisional agenda

Miscellaneous proposals for amendments to the Model

Regulations on the Transport of Dangerous Goods:

Portable tanks

Transport of certain ALKALI METAL DISPERSIONS (UN 1391) and ALKALI METAL DISPERSIONS, FLAMMABLE (UN3482) in portable tanks

Transmitted by the expert from the United States of America

Introduction

1. As the global demand for lithium increases particularly given the potential use in energy storage applications, the need has arisen for the international transport of lithium dispersions (slurries comprised of lithium metal powder and hydrocarbon solvent) in portable tanks. Technological innovations allow alkali metals incorporated in liquid dispersions to be seamlessly incorporated into manufacturing processes and directly printed onto lithium battery anodes. This process provides battery manufacturers with greater control and precision regarding how much lithium is used in cell production. This reduces the amount material wasted and leads to more efficient use of rare earth minerals in cell production.
2. The Dangerous Goods List entries for ALKALI METAL DISPERSIONS of ALKALINE EARTH METAL DISPERSIONS (UN 1391) and ALKALI METAL DISPERSIONS, FLAMMABLE or ALKALINE EARTH METAL DISPERSIONS, FLAMMABLE (UN 3482) do not indicate a portable tank instruction in Column 10. Consequently, these substances are not permitted to be transported in UN portable tanks unless a competent authority approval is granted.
3. This paper proposes to authorize the transport of lithium dispersions transported as ALKALI METAL DISPERSIONS (UN 1391) and ALKALI METAL DISPERSIONS, FLAMMABLE (UN 3482) in UN portable tanks that conform to tank instruction T13 and special provisions TP1 and TP7 through the creation of a new special provision.

Discussion

4. The ALKALI METAL DISPERSIONS (UN 1391) and ALKALI METAL DISPERSIONS, FLAMMABLE (UN 3482) entries in the Dangerous Goods List both reference special provision 182 in Column 6, which states that the “group of alkali metals includes lithium, sodium, potassium, rubidium, and caesium”.
5. The Guiding Principles for the Model Regulations indicate that liquid Division 4.3 substances of Packing Group I are in principle considered suitable for the transport in portable tanks conforming to portable tank instruction “T9” or “T13” (for n.o.s.). Likewise, solid Division 4.3 substances of Packing Group I are considered suitable for transport in portable tanks conforming to portable tank instruction “T9”.

6. Numerous solid substances of Division 4.3, Packing Group I are authorized for transport in portable tanks conforming to portable tank instruction T9. These substances include but not limited to: UN 1415 LITHIUM; UN 1428 SODIUM; UN 2257 POTASSIUM; UN 3395 ORGANOMETALLIC SUBSTANCE, SOLID, WATER-REACTIVE; UN 3396 ORGANOMETALLIC SUBSTANCE, SOLID, WATER-REACTIVE, FLAMMABLE; and UN3401 ALKALI METAL AMALGAM, SOLID. Liquid substances of Division 4.3, Packing Group I including but not limited to UN 3398 ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE; UN 3399 ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE; and UN 3148 WATER-REACTIVE LIQUID, N.O.S are also authorized for transport in portable tanks conforming to portable tank instruction T13.

7. A portable tank code (T9) has been assigned to the entry for UN 1415 LITHIUM in the Model Regulations since the 19th Revised Edition. The Model Regulations provide for the transport of Division 4.3, PG I solid and liquid substances in UN portable tanks under various specific and generic entries in the Dangerous Goods List as documented in paragraph 6 above. Based on these precedents, the transport of lithium dispersions in UN portable tanks would appear to be consistent with the level of safety contemplated by the Model Regulations for similar materials.

8. Special provision 274 is not assigned to these two UN numbers so it is not readily apparent what alkali metal is contained within the dispersion. As other alkali dispersions (e.g., those containing sodium or potassium) are not being proposed for authorization to use a portable tank it is necessary to have an indication that the shipment is in accordance with the proposed special provision and thus an indication that the portable tank contains lithium dispersions.

Proposal

9. In 3.3.1 add a new special provision XXX and assign it to the 3.2 DGL column 6 for entries UN 1391 and UN 3482 as follows:

XXX Lithium dispersions (lithium metal powder in hydrocarbon solvent) may be transported in portable tanks that conform to tank instruction T13 and special provisions TP1 and TP7 in 4.2.5. The transport document shall include the following statement: "Transport in accordance with special provision XXX".
